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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/333,379	06/15/1999	LEROY G. HAGENBUCH	189405	4050

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EXAMINER

GARCIA OTERO, EDUARDO

ART UNIT PAPER NUMBER

2123

DATE MAILED: 12/08/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/333,379

Applicant(s)

HAGENBUCH ET AL.

Examiner

Eduardo Garcia-Otero

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004 and 20 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26,28-36,38 and 52-81 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-28,36,38,52-63 and 68-72 is/are allowed.
- 6) ☐ Claim(s) 64-67 and 73-81 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/16/04, 9/20/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION: Non-Final Action

Introduction

1. Title is: PROCESS FOR THREE-DIMENSIONAL MODELING AND DESIGN OF OFF-HIGHWAY DUMP BODIES
2. First named Inventor is: HABENBUCH.
3. Claims 1-26, 28-36, 38, and 52-81 are pending. The independent claims are 1, 21, 31, 52, 60, 64, 68, 73, and 78.
4. Applicant's Request for Continued Examination (RCE) and Information Disclosure Statement were received 8/16/04, and an additional Information Disclosure Statement was received 9/20/04.
5. US Application was filed 6/15/1999, and no earlier priority is claimed.

Applicant's REMARKS

6. The Examiner appreciates Applicant's diagram or "claim tree", conveniently provided at Remarks page 16.
7. Applicant has amended some claims, and added some new claims. Most of the claims are allowable.
8. The Markush group of independent claim 1 states "at least two of a group consisting of the body front wall, one of the two body sidewalls". This is novel, because no prior art recognizes the asymmetry in the front angle of repose and either of the two side angles of repose. For example, front and left side have different angles of repose. Alternately, front and right side have different angles of repose.
9. The Examiner believes that Applicant's intent, as disclosed by his application and particularly by the experimental data, is for the Markush group to also include the possibility the left side and the right side having different angle of repose. In other words, if the Markush group stated "at least two of a group consisting of the body front wall, one of the two body sidewalls, and the other body sidewall", then there would be three possibilities: A) front and left, or B) front and right, or C) left and right. Applicant's experimental data shows that the front, and the left, and the right (three different elements) all may have different angles of repose, and this novel discovery supports the broader Markush group which appears to be the Applicant's intent.

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10. Experimentally, the difference between the left side angle of repose and the right side angle of repose is relatively small, and appears dependent upon the method of loading (particularly which side the truck is being loaded from). However, a design that considered this small difference would be customized (slightly) for loading from a specific side of the truck. This level of customization may or may not be desired from a production or operational point of view, but it is certainly disclosed and supported by Applicant's experimental data. Further, it appears to be the Applicant's intent from prior versions of the claims.
11. Thus, the Examiner suggests (but does not require) that the Markush group be expanded to 3 elements, in order to more accurately (and more broadly) claim the Applicant's invention.
12. Regarding independent claims 21, 31, 52, and 60 see discussion of claim 1 above.
13. Regarding independent (new) claim 64. Applicant introduces "back angle" as one of the elements in the Markush group. This is rejected, similar to the rejection of claim 1 in the prior action. See rejections below.
14. Regarding independent (new) claim 68, the combination of truncating the peak of the heap (introducing a plateau instead of a sharp peak) and blending each of the side angles is not obvious, and thus is allowable.
15. Regarding independent claim 73, see indefiniteness rejections below regarding "data... three dimensions".
16. Regarding claim 78, the simple conical shape is rejected below, but would be allowable if amended to include an additional limitation of truncating the cone (similar to claim 68 above).
17. To summarize, independent claims 1, 21, 31, 52, 60, and 68 (and their dependent claims) are allowable.
18. Independent claims 64, 73, and 78 (and their dependent claims) are not allowable.
19. Independent claims 64 and 78 would be allowable if amended as suggested above.
20. Independent claim 73 has substantial difficulties, and the Examiner suggests canceling it (and its dependent claims).
21. If the Applicant follows the above suggestions, then the next office action will very probably be a notice of allowance. Note that broadening the Markush group is optional.

Secondary Consideration: commercial success

22. SIGNIFICANT COMMERCIAL SUCCESS (SECONDARY CONSIDERATIONS). At the interview of 11/25/02, Applicant asserted significant commercial success of the invention, stating that Philippi-Hagenbuch (assignee) has sold approximately 60 dump bodies designed using the inventive process. The Examiner notes that a picture of a custom designed dump body, in use, was shown during the interview of 11/25/02. The Examiner further notes that custom (point of use, and asymmetric angles of repose) designed dump bodies appear to be an entirely new market (or sub-market), and that these large dump bodies are very expensive items. In view of these facts, the Examiner attaches substantial weight to this secondary consideration.
23. See MPEP 716.01(a) and *Minnesota Mining and Manufacturing Co. v. Johnson & Johnson Orthopedics, Inc.*, 24 USPQ 2d 1321 (Fed. Cir. 1992) regarding commercial success.

35 USC § 112-Second Paragraph-indefinite claims

24. The following is a quotation of the second paragraph of 35 U.S.C. 112: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
25. Claims 73-77 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
26. In independent claim 73, the term “angles of repose of heaped material in three dimensions” is not clear. It is not clear how this term is intended to be different from the terminology of the other pending claims regarding front and side angles of repose. Also note that Caterpillar Inc., Product Division, Field Representative Information Release, N149F “769 Series B Truck,” 08/24/66, Page 6 first full paragraph states “While field weight distribution will vary, depending upon loading techniques and material characteristics, continuous analysis of actual weight studies, indicates normal load shapes are actually closer to a 1.7:1 heaped load pattern. Caterpillar has thus adopted the 1.7:1 heaped load shape to calculate published figures for the 769B”
27. Claims 74-77 depend from claim 73, and are indefinite for the same reasons.

Claim Rejections - 35 USC § 103

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
29. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: Determining the scope and contents of the prior art. Ascertaining the differences between the prior art and the claims at issue. Resolving the level of ordinary skill in the pertinent art. Considering objective evidence present in the application indicating obviousness or nonobviousness.
30. Claims 64-67, and 78-81 are rejected under 35 U.S.C. 103(a) as being unpatentable.
31. Note that Hagenbuch US Patent 5,887,914 has a different inventive entity (LeRoy G. Hagenbuch) than the inventive entity of the present application (Leroy G. Hagenbuch and Philip T. Brinkman). Thus, Hagenbuch '914 constitutes 102(e) type prior art that may be used in a 103(a) rejection. Additionally, note that the MPEP 706.02(k) exclusion of 102(e) prior art assigned to the same person does not apply because this application was filed before November 29, 1999 (on June 15, 1999).
32. Claims 64-66 are rejected under 35 USC 103(a) as being unpatentable over Caterpillar Release N149F in view of Hagenbuch US Patent 5,887,914
33. Claim 64 (new) is an independent claims with 3 limitations.
34. **“(a) collecting data ... includes at least two angles of repose for the heaped material selected from a group of angles of repose consisting of (1) a front angle, (2) a back angle, (3) a first side angle, and (4) a second side angle”** is disclosed by Caterpillar Release N149F page 6 “field weight distribution will vary...” and the SAE standard truck loading model at page 3 which discloses the back of the load as having two angles of repose.
35. Thus, the asymmetry between the front and the back is disclosed in the prior art. Note that “front” and “back” is one possible group claimed in limitation (a). Amending this limitation to delete the element “a back angle” would result in an allowable claim.
36. Caterpillar Release N149F does not explicitly disclose the remaining limitations.

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37. **“(b) determining a set of design parameters for the container from the collected data”** is disclosed by Hagenbuch ‘914 at FIG 14A Step 2 “Calculate correct load placement center of gravity”, and FIG 14B Step 8c “Dose (sic) trial load volume match maximum desired load...?” and FIG 9A “body floor line”, FIG 9B “front slope line”, and FIG 10A “inside body width”, and FIG 14B Steps 8f “Too far forward” through Step 8m “Move Slope Components Rearward”.
38. **“(c) producing the body in accordance with the set of design parameters”** is disclosed by Hagenbuch ‘914 at FIG 14B Step 9 “DESIGN COMPLETED”.
39. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Hagenbuch ‘914 to modify Caterpillar Inc. (Release N149F) a. One of ordinary skill in the art would have been motivated to do this to more accurately match the body design to the “loading techniques and material characteristics” by designing based on a smaller and more specific heaped load pattern data set.
40. Claim 65 depends from claim 64, with one additional limitation.
41. The additional limitation is not disclosed by Caterpillar Release N149F.
42. **“the set of design parameters includes one or more of (1) a position of the body’s floor...”** is disclosed by Hagenbuch ‘914 at FIG 9A “body floor line”, FIG 9B “front slope line”, and FIG 10A “inside body width”.
43. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Hagenbuch ‘914 to modify Caterpillar Inc. (Release N149F) a. One of ordinary skill in the art would have been motivated to do this to more accurately match the body design to the “loading techniques and material characteristics” by designing based on a smaller and more specific heaped load pattern data set.
44. In claim 66, the additional limitation is not disclosed by Caterpillar Release N149F.
45. **“adjusting the set of design parameters to locate a center of gravity of material held in the modeled body at approximately a lowest possible position for the center of gravity”** is disclosed by Hagenbuch ‘914 at FIG 14A Step 2 “Calculate correct load placement center of gravity” and FIG 14B Step 9 “DESIGN COMPLETED”.
46. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Hagenbuch ‘914 to modify Caterpillar Inc. (Release N149F) a. One of

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ordinary skill in the art would have been motivated to do this to more accurately match the body design to the “loading techniques and material characteristics” by designing based on a smaller and more specific heaped load pattern data set.

47. Claims 67 is rejected under 35 USC 103(a) as being unpatentable over Caterpillar Release N149F in view of Hagenbuch US Patent 5,887,914 and Euclid Inc., Form 12-015.

48. In claim 67, the additional limitation is not disclosed by Caterpillar Release N149F.

49. **“adjusting the set of design parameters to allow material to be dropped into the modeled body from a lowest practical vertical elevation over a floor of the body”** is disclosed by “Euclid Inc., Form 12-015 “Euclid R-85 Specifications”, 08/77 on Page 4 “the low loading height of 14-4” (4369 mm) allows sufficient clearance to cleanly deposit a full bucket load”.

50. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Hagenbuch ‘914 and Euclid to modify Caterpillar Inc. (Release N149F) One of ordinary skill in the art would have been motivated to do this to more accurately match the body design to the “loading techniques and material characteristics” by designing based on a smaller and more specific heaped load pattern data set, and to design the sides low enough to allow “sufficient clearance” per Euclid.

51. Claims 78-80 are rejected under 35 USC 103(a) as being unpatentable over Official Notice (cones) and Hagenbuch ‘914.

52. **“(a) the shape is substantially conical”** is disclosed by the well known primitive shape of a cone. The Examiner takes official notice that it is well known in the art that granular material slowly dropped in a large pile from a single fixed discharge point onto a flat surface forms a cone with a single angle of repose. Most children in a sandbox have witnessed this phenomenon. A sand hourglass is another well known example. Thus, a conical load shape is well known. Further, note that a cone is defined by a single angle of repose.

53. Official Notice (cones) does not disclose the remaining limitation.

54. **“(b) modeling a body”** is disclosed by Hagenbuch ‘914 at FIG 14A Step 2 “Calculate correct load placement center of gravity”, and FIG 14B Step 8c “Dose (sic) trial load volume match maximum desired load...” and FIG 9A “body floor line”, FIG 9B “front slope line”,

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and FIG 10A “inside body width”, and FIG 14B Steps 8f “Too far forward” through Step 8m “Move Slope Components Rearward”.

55. **“(c) producing the body”** is disclosed by Hagenbuch ‘914 at FIG 14A Step 2 “Calculate correct load placement center of gravity” and FIG 14B Step 9 “DESIGN COMPLETED”.
56. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Official Notice (cones) to modify Hagenbuch’914 in order to accurately model loads for granular materials. Note that modern CAD makes the volumetric and center of gravity calculations for intersected cones (intersected by intersections with the dump body) more feasible, rather than being limited to the flat planes of the old SAE standards which facilitated coarse slide rule calculations.
57. In claim 79, the additional limitation is not disclosed by Official Notice (cones).
58. **“parameters include one or more of (1) a position of the body’s floor...”** is disclosed by Hagenbuch ‘914 at FIG 9A “body floor line”, FIG 9B “front slope line”, and FIG 10A “inside body width”.
59. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Official Notice (cones) to modify Hagenbuch’914 in order to accurately model loads for granular materials. Note that modern CAD makes the volumetric and center of gravity calculations for intersected cones (intersected by intersections with the dump body) more feasible, rather than being limited to the flat planes of the old SAE standards which facilitated coarse slide rule calculations.
60. In claim 80, the additional limitation is not disclosed by Official Notice (cones).
61. **“adjusting the set of design parameters to locate a center of gravity of material held in the modeled body at approximately a lowest possible position for the center of gravity”** is disclosed by Hagenbuch ‘914 at FIG 14A Step 2 “Calculate correct load placement center of gravity” and FIG 14B Step 9 “DESIGN COMPLETED”.
62. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Official Notice (cones) to modify Hagenbuch’914 in order to accurately model loads for granular materials. Note that modern CAD makes the volumetric and center of gravity calculations for intersected cones (intersected by intersections with the dump

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body) more feasible, rather than being limited to the flat planes of the old SAE standards which facilitated coarse slide rule calculations.

63. Claim 81 is rejected under 35 USC 103(a) as being unpatentable over Official Notice (cones) and Hagenbuch'914 and Euclid Inc., Form 12-015.

64. In claim 81, the additional limitation is not disclosed by Official Notice (cones).

65. **“adjusting the set of design parameters to allow material to be dropped into the modeled body from a lowest practical vertical elevation over a floor of the body”** is disclosed by “Euclid Inc., Form 12-015 “Euclid R-85 Specifications”, 08/77 on Page 4 “the low loading height of 14-4” (4369 mm) allows sufficient clearance to cleanly deposit a full bucket load”.

66. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Hagenbuch'914 and Euclid to modify Official Notice (cones). One of ordinary skill in the art would have been motivated to do this to more accurately match the body design to the “loading techniques and material characteristics” by designing based on a smaller and more specific heaped load pattern data set, and to design the sides low enough to allow “sufficient clearance” per Euclid.

Patentable material

67. ASYMMETRIC ANGLES OF REPOSE. At present, the Examiner believes that this application contains substantial potentially patentable material. Specifically, Applicant has observed that front, left, rear, and right side angles of repose are different for material dumped on a truck. This variation is counterintuitive. This variation appears to contradict the well known radially symmetric conical shape formed by sand slowly dropped from a single point in a child's sandbox, or from sand dropped in an hourglass. Additionally, this variation (front, left, rear, right) is contradictory to industry standards for dump bodies, such as SAE J1363 NOV95. The reasons for this variation are complex, and beyond the scope of this examination.

68. The only hint that the Examiner can find of this type of variation or asymmetry during loading is that said standard (SAE J1363 NOV95) uses two angles for the rear portion of the dump: a slope of 1/2 for the top of the rear, and a slope of 1/1 for the bottom of the rear. The

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reasoning for using these two angles for the two portions of the rear is not known.

Nevertheless, asymmetry of the rear (with respect to the front and/or the sides) is disclosed.

69. Note that specification page 11 line 33 states "In most cases, the angles of material repose that run to the front, rear and sides of the dump body will all be somewhat different namely due to natural and impose angles of repose occurring as a result of the loading process". This disclosure is the basis for substantial patentable material. Specifically, asymmetric angles of repose between the front and sides, or between the sides, appears novel.
70. Further note that some IDS publications disclose competitors using load models with front asymmetric with respect to the sides, but said publications are not prior art because they are dated after the filing date of the present application.
71. Applicant's extensive IDS publications also disclose asymmetric angles (upstream angle versus downstream angle) caused by strong external flows such as wind blowing on a desert sand dune, or river water running over gravel. These external flows do not appear relevant to the present invention.
72. Additionally, the truncation of the sharp peaks of the load models appears to be non-obvious.

Conclusion

73. To summarize, independent claims 1, 21, 31, 52, 60, and 68 (and their dependent claims) are allowable.
74. Independent claims 64, 73, and 78 (and their dependent claims) are not allowable.
75. Independent claims 64 and 78 would be allowable if amended as suggested above.
76. Independent claim 73 has substantial difficulties, and the Examiner suggests canceling it (and its dependent claims).
77. If the Applicant follows the above suggestions, then the next office action will very probably be a notice of allowance. Note that broadening the Markush group is optional.

Communication

78. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 571-272-3711. The examiner can normally be reached on Monday through Thursday from 9:00 AM to 8:00 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at 571-272-3761. The fax phone number for this group is 703-

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872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

* * * * *



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER